

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
2 December 2004 (02.12.2004)

PCT

(10) International Publication Number  
**WO 2004/105250 A3**

(51) International Patent Classification<sup>7</sup>: **G06T 9/00,**  
H04N 5/262

(21) International Application Number:  
PCT/US2004/009866

(22) International Filing Date: 30 March 2004 (30.03.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/470,712 15 May 2003 (15.05.2003) US

(71) Applicant (for all designated States except US): THOMSON LICENSING S.A. [FR/FR]; 46, Quai A. Le Gallo, F-92648 Boulogne (FR).

(72) Inventors; and

(75) Inventors/Applicants (for US only): GOMILA, Cristina [ES/US]; 25C Chestnut Court, Princeton, NJ 08540 (US). KOBILANSKY, Alexander [US/US]; 17 Seneca Road, Ossining, NY 10562 (US).

(74) Agents: TRIPOLI, Joseph, S. et al.; Thomson Licensing Inc., Two Independence Way, Suite #200, Princeton, NJ 08540 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

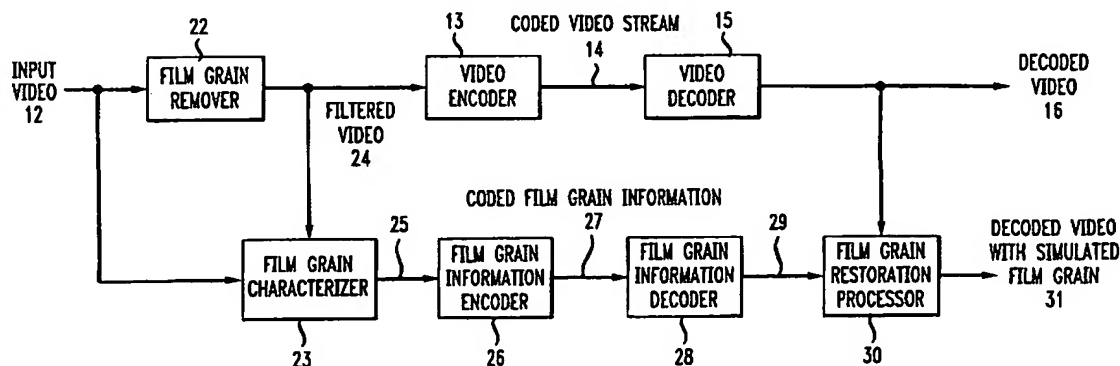
**Published:**

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:  
24 March 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD AND APPARATUS FOR REPRESENTING IMAGE GRANULARITY BY ONE OR MORE PARAMETERS



(57) Abstract: To simulate film grain in a compressed video signal, a decoder (15, 28) receives a message containing information that contains a set of one or more parameters, each specifying certain attribute associated with the film grain. For example, one of the parameters will specify the model used to simulate the film grain, whereas other parameters each specify a particular factor associated with that model. Upon receipt of the message, the decoder selects the model, and simulates the film grain for addition to the video signal following decompression.

# INTERNATIONAL SEARCH REPORT

onal Application No  
PCT/US2004/009866

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 G06T9/00 H04N5/262

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 G06T H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC, IBM-TDB

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 641 596 A (COK DAVID R ET AL) 24 June 1997 (1997-06-24)	1-4, 9, 10, 14, 15, 18-20
A	abstract; figures 2, 3 column 6, line 19 - line 67	5-8, 11-13, 16, 17, 21, 22
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents:

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Date of the actual completion of the international search

25 January 2005

Date of mailing of the international search report

02/02/2005

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Herter, J

# INTERNATIONAL SEARCH REPORT

In International Application No  
PCT/US2004/009866

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>CAMPISI P ET AL: "Signal-dependent film grain noise generation using homomorphic adaptive filtering"            IEE PROCEEDINGS: VISION, IMAGE AND SIGNAL PROCESSING, INSTITUTION OF ELECTRICAL ENGINEERS, GB,            vol. 147, no. 3,            23 June 2000 (2000-06-23), pages 283-287,            XP006014574            ISSN: 1350-245X            the whole document</p>	1-22
A	<p>JACKY CHUN KIT YAN ET AL:            "Signal-dependent film grain noise removal and generation based on higher-order statistics"            HIGHER-ORDER STATISTICS, 1997.,            PROCEEDINGS OF THE IEEE SIGNAL PROCESSING WORKSHOP ON BANFF, ALTA., CANADA 21-23 JULY 1997, LOS ALAMITOS, CA, USA, IEEE COMPUT. SOC, US,            21 July 1997 (1997-07-21), pages 77-81,            XP010239820            ISBN: 0-8186-8005-9            the whole document</p>	1-22
A	<p>WO 02/33958 A (EASTMAN KODAK CO)            25 April 2002 (2002-04-25)            abstract; figures 7,13            page 2, line 28 - page 3, line 4            page 4, line 23 - line 26            page 5, line 5 - line 24            page 11, line 6 - page 12, line 10            page 14, line 17 - line 19            page 19, line 28 - page 20, line 28            page 21, line 5 - page 23, line 11            page 25, line 6 - page 27, line 29            page 35, line 11 - page 36, line 6</p>	1-22
A	<p>US 2002/034337 A1 (SHEKTER JONATHAN MARTIN) 21 March 2002 (2002-03-21)            abstract; figures 1,8            paragraph '0072!</p>	1-22
A	<p>US 6 269 180 B1 (SEVIGNY BENOIT)            31 July 2001 (2001-07-31)            abstract; figures 10,20            column 6, line 59 - column 7, line 24</p>	1-22

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No  
PCT/US2004/009866

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5641596	A	24-06-1997	NONE	
WO 0233958	A	25-04-2002	EP 1329094 A2 JP 2004512595 T WO 0233958 A2	23-07-2003 22-04-2004 25-04-2002
US 2002034337	A1	21-03-2002	CA 2309002 A1 CA 2348325 A1	23-11-2001 23-11-2001
US 6269180	B1	31-07-2001	CA 2201682 A1 GB 2312124 A ,B	12-10-1997 15-10-1997